only between 9 March and 1 September, during which time it was only common between late April and mid-July. This restricted period coincides with the time when the river was at its lowest, although ample rock space was available until mid-November (J. F. Walsh). Snow (1978) also states that these pratincoles breed when the rivers are at their lowest. However this was not the case in Togo, as the river was beginning to rise in March and it was very high in both 1978 and 1979 during July (Fig. 1), the month when the fledglings appeared. Thus the species' breeding can be a precarious process. The birds in Togo did not lay until the rains began, but then had to rear their fledglings before these rains had increased sufficiently to turn the river, at their site, into a torrent. However, it is possible that the young were a second brood or that the first clutches had failed and the birds consequently bred later than usual. Also if the birds are migrants they may be able to breed elsewhere, at other times of the year, and so have 2 breeding periods a year like the Gabon birds. The latter can, of course, benefit from 2 dry seasons without migrating.

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Address: Dr. R. A. Cheke, Centre for Overseas Pest Research, College House, Wrights Lane, London W8 5SJ, U.K.

Larus relictus—a review

by A. R. Kitson

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Introduction

During an ornithological survey of wetlands in Mongolia in 1977 (Kitson 1978) I observed Relict Gulls *Larus relictus* at a new site. Much of the published material on this species proved difficult to obtain and to be predominantly in Russian. This review is intended to bring together in English the facts known about *Larus relictus.*

When Dwight wrote his monograph on the gulls of the world (1925), *Larus*

relictus had yet to be discovered. The original specimen (see below) was examined by Lönnberg (1931b), who considered it to belong to an undescribed race of Mediterranean Gull and named it *Larus melanocephalus relictus*. Dementyev (1951) reappraised the specimen and, puzzled by its uniqueness, invoked the idea that it might not be a form of *melanocephalus* at all, but an aberrant Brown-headed Gull *L. brunnicephalus*. Alexander (1955) lists it as a subspecies of *melanocephalus* without comment. Mayaud (1956) dismissed Dementyev's suggestion in preference for Lönnberg's view. Voous (1960) seemingly upheld Lönnberg's classification too and duly extended the range of *melanocephalus* by some 5000 km to include southern Gobi. Vaurie (1962) compiled a monograph on the specimen; he too was bedevilled by its continued uniqueness – that part of Asia having been collected over quite widely – and concluded that it must be a hybrid *L. brunnicephalus* x Great Black-headed Gull *L. ichthyaetus*, despite their disparity in size, and adduced palaeological and geological theory to dispute the evolutionary implication inherent in Lönnberg's hypothesis. Not until Auezov (1970) revealed a colony of gulls on lake Alakul identical to the problematic skin was the dilemma resolved. The following year the same author published a full account of this colony, the main data of which were given in support of his claim for *Larus relictus* Lönnberg, a distinct species. Since then the other records presented below have come to light, the most recent being my own from Orok Nor and those from Hök Nor, Mongolia. A brief résumé of these events and of the status of *relictus* is given by Isenmann (1977). Cheng Tso-hsin (1976) merely mentions the original individual for China. Tuck (1978) includes *relictus* in his field guide. Voous (1973) has bestowed upon it the English name Relict Gull.

Records of Larus relictus

L. relictus is known from 9 sites in central, eastern and southeastern Asia.

1. The original specimen came from southern Gobi, collected by K. G. Söderbom, a member of Sven Hedin's expedition, on 24 April 1929 at Tsondol on the Etsin* river in northern Inner Mongolia, now in Kansu, China (41° 53′ 30″N, 101° 6′ 33″E)† (Lönnberg 1931a). It is an adult (sex unknown) in breeding plumage and is housed at the Naturhistoriska Riksmuseum of Stockholm.

2. An adult was collected on 9 April 1935 on the west shore of Po Hai (Gulf of Chihli), near the port of T'ang-ku (39° 00′N, 117° 40′E), not far from T'ien-ching (Tientsin), China. It lay unrecognised in the Zoological Institute of the Academy of Science in Leningrad until its discovery by Auezov (1971).

3. At the Torey lakes in Transbaikalia, some 250 km southeast of Chita on the Mongolian border (50° 9′N, 115° 15′E), flocks of up to 30 were seen in May 1963, a single was taken on 12 May 1965 on the eastern lake (Dzoon Torey Nor), and a colony of over 100 pairs was discovered in June 1967 on the western lake (Baroon Torey Nor). Although initially identified as *brunnicephalus* (Leontyev 1968, reported in Auezov 1971), they have since been redetermined as *relictus* (Auezov 1971, Larionov & Cheltsov-Bebutov 1972).

*In Mongol it is Etsin or Edsin Gol (gol=river); in Chinese it is evidently called Jo Shui (Times Atlas). †With the exception of this set of coordinates—given by Lönnberg himself—all others are my own and are approximations only. An absence of coordinates indicates that I was unable to pin-point the locality on the maps available to me.

4. An adult collected 15 May 1966 at Bayan Nor (nor=lake), a small lake just south of Buir Nor in eastern Mongolia near the Manchurian frontier (47° 40′N, 117° 36′E), was falsely labelled as Black-headed Gull *L. ridibundus* and remained so in the collection of the Institute of Biology, Mongolian Academy of Science, Ulan Bator until discovered and correctly identified as *relictus* by Stubbe & Bolod (1971).

5. In 1968 a colony of 25–30 pairs was found on Sredni island (0.6 km²) in lake Alakul, Kazakhstan (46° 12′N, 81° 44′E) (Auezov 1970). It was the investigation of this colony which led to the recognition of the species *L. relictus* (Auezov 1971). Of 193 young ringed there between 1968 and 1971, 3 have been recovered. The first, ringed at 15–20 days old on 25 June 1968, was recovered in the southwest part of Alakul, some 30–40 km south of Sredni island on 25 September of that year (Auezov 1974).

6. The sixth record is of the second recovery from Sredni, a juvenile, ringed as a chick 1–5 days old on 3 June 1971 and recovered on 29 August of the same year in the Abayesk region of Semipalatinsk Oblast, 250–300 km northwest of Sredni island (Auezov 1974).

7. The seventh record is of the third and most exciting recovery from Sredni, a 1–5 day old chick ringed on 3 June 1971 and recovered on 30 September that year at lake Bai-ti-Long, Kuangnin province, north Vietnam (Auezov 1974).

8. In 1977 I found about 20 pairs at Orok Nor in Mongolia (45° 00′N, 100° 45′E) 24 April–5 May, and 3 at nearby Taatsing Tsagan Nor (45° 10′N, 101° 28′E) 6–7 May.

9. Three adults were collected at Hök Nor, Mongolia (49° 30′N, 115° 35′E) on 5 July 1977 and have been deposited with the Institute ofBiology, Academy of Science, Ulan Bator (A. Bold and D. Batdelger).

Breeding stations of *Larus relictus* have thus been established at lake Alakul in Kazakstan (no. 5 site) and at the Torey lakes (no. 3) in Transbaikalia. Judging from the dates of collection, it is likely that both Buir Nor (no. 4) and Hök Nor (no. 9) in eastern and northeastern Mongolia are also breeding posts. Furthermore, although my visit toO rok Nor (no. 8) in mid south Mongolia in April was too early in the season to secure direct proof of breeding, I suspect that here lies a fifth breeding locality, since all birds there were paired adults and apparently prospecting for nest sites. That *relictus* does not, or at least did not, breed at Orok Nor is however suggested by its failure to be detected there by previous investigators. For instance, neither Kozlova (1932, 1933), who collected at Orok Nor in the summer of 1925 and during the entire spring of 1926, nor Piechocki (1968), who visited it in early June 1962, reported any strange gulls. Kozlova noted that Black-headed Gulls which had been very abundant in April ". . . left in the middle of May, and none remained in that region [Orok Nor] to breed" suggesting that, had *relictus* been present with and overlooked among the *ridibundus*, they likewise must have moved on. During a survey of the Great Lakes in western Mongolia in summer 1979 (Kitson in prep.) I found no trace of *relictus*.

The individual from Inner Mongolia (no. 1) was collected on an early date and might reflect a migration route rather than a breeding site. The remaining 3 records are more enigmatic. The juvenile (no. 6) reported in August northwest of its fledging site was presumably a wanderer or on post-fledging dispersal, since a northerly migration in autumn is intuitively unlikely. Although

the juvenile reported in Vietnam (no. 7) on 30 September may be considered as a directional migrant heading for winter quarters, it may also be an example of post-fledging dispersal. Moreover, the adult from the Yellow Sea in April (no. 2) may hardly be treated as a winter record, rather as a migrant or vagrant. In short the wintering area of *Larus relictus* remains unknown, but may tentatively be thought of as lying between T'ien-ching and Vietnam in the East and South China Seas.

Field characters

My experience of *relictus* is limited to the adult plumage. In the comparisons made below I am familiar with all species except *L. saundersi*, which I have not seen.

Adult. In the field the adult *relictus* strongly recalls *melanocephalus*, particularly second-year individuals, by virtue of the black marks at the wing tip. It is larger than *ridibundus* (Fig. 1) and differs from it in having a more extensive, blackish (not brown) hood, a heavier bill and predominantly whitish wings. Similarly, from *brunnicephalus* it may be identified by its mostly black (not wholly brown) head and whiter wings. Relict Gulls continually reminded me of small *ichthyaetus*, having in common both wing pattern and head pattern. From the rare Saunders' Gull *L. saundersi* and Little Gull *L. minutus*—the only other Asiatic hooded gulls—*relictus* must be quickly distinguishable by its greater size in every respect and lack of black on the underwing (excepting the wing tip). Notwithstanding the unlikelihood of *relictus* being encountered within the range of *melanocephalus*, the adults of these 2 species are readily separable by their wing pattern, the primaries of *melanocephalus* appearing entirely white, those of *relictus* being marked with black (Fig. 1). On the other hand *melanocephalus* in second-year plumage normally shows some black markings on the leading primaries and, although this pigmentation is often far more reduced than in adult *relictus*, other differentiating characters need to be made use of: *relictus* is bigger than *melanocephalus*, is longer in the leg, has a more massive bill (see below under measurements), a hood which is chocolate-coloured anteriorly and dull sooty black posteriorly (whereas it is black in *melanocephalus*), and periorbital flashes which are more pronounced than in *melanocephalus*.

Detailed description

(a) *Measurements*. Table 1 shows that *relictus*, in comparison with *melanocephalus*, is longer in wing, tail and tarsus; its bill is marginally longer and marginally deeper at the angle. Its wing and tail dimensions overlap those of *brunnicephalus*.

(b) *Plumage and bare parts*

Adult. Head, region at base of bill and forehead chocolate brown, becoming increasingly black posteriorly; crown, hind neck, sides of head and throat dull sooty black. The hood extends to the nape and is especially extensive down the throat. There is a pair of white periorbital flashes, one above and one below the eye, spreading backwards, larger than in *melanocephalus* and similar to those in *ichthyaetus*. Nape, underparts, underwing and tail white. Mantle, rump and upperwing coverts pearl-grey. Remiges appear white, though apparently inner primaries and outer secondaries are pale grey (Stubbe & Bolod 1971). Primaries 2–7 are marked with black distally, the extent varying individually (see Auezov 1971). All tips are white. The tiny first primary is white. Bill and legs are venous-blood red.

Table 1 Some measurements (mm and g) of *Larus relictus* and other Asiatic *Larus* hooded gulls.

Species	No. Sex	Wing length	Tail length	Tarsus	Culmen	Depth of bill at base	Depth of bill at angle	Weight	Source
relictus	1	340	123	59	37 53†	11.3	—	—	Lonnberg 1931b
relictus	1	355	138	58	36	11.5	—	—	Stubbe & Bolod 1971
relictus	5♂♂	338–352 (344.8)	134–150 (142.1)	53–61 (58.1)	(36.6)	(11.5)	(11.8)	(518.6)	Auezov 1971
relictus	6♀♀	(322.3)	(136.6)	(55.6)	(34.4)	(10.2)	(11.3)	(462.8)	Auezov 1971
melanocephalus	5♂♂ 5♀♀	290–317* (300.7)	99–119 (111.3)	44–50 (46.9)	42–49† (44.5)	—	—	—	Vaurie 1962
melanocephalus	?	291–311	113–127	50–55	—	—	—	—	Auezov 1971
melanocephalus	9♂♂	291–311 (303.3)	118–127 (122.9)	48–53 (51.1)	33–38 (35.5)	10–12 (11.0)	10–12 (11.3)	—	Dwight 1925
melanocephalus	12♀♀	282–296 (289.4)	113–120 (116.5)	47–51 (48.3)	31–36 (33.4)	10–11 (10.5)	10–11.5 (10.7)	—	Dwight 1925
brunnicephalus	5♂♂ 5♀♀	322–352* (337.1)	122–134 (126.5)	47–54 (50.3)	—	—	—	—	Vaurie 1962
brunnicephalus	5♂♂	335–347 (339)	129–138 (133.6)	46–52 (50.4)	50–58† (53.5)	—	—	—	Auezov 1971
brunnicephalus	13♂♂	322–347 (338.2)	126–140 (135.1)	49–55 (52.7)	36–44 (40.5)	11–13 (11.8)	11–12 (11.6)	—	Dwight 1925
brunnicephalus	12♀♀	309–328 (322.7)	121–135 (127.5)	45–54 (49.1)	34–39 (37.7)	10–11 (10.9)	10–11 (10.4)		Dwight 1925
ichthyaetus	9♂♂	470–500 (483.1)	180–203 (189.8)	74–83 (78.5)	58–65 (61.7)	18–21.5 (19.8)	18.5–22 (21.0)	—	Dwight 1925
ichthyaetus	8♀♀	422–468 (451.2)	171–185 (177.1)	65–76 (71.2)	50–60 (55.9)	16–19 (17.5)	16–20 (18.4)	—	Dwight 1925
ridibundus sibiricus	11♂♂	305–325 (312.4)	121–133 (126.6)	43–49 (46.4)	34–39 (36.8)	9–10.5 (9.7)	8.5–10 (9.3)	—	Dwight 1925
ridibundus sibiricus	10♀♀	280–300 (290.0)	108–125 (116.9)	41–46 (43.4)	32–38 (34.0)	8–9 (8.4)	8–9 (8.3)	—	Dwight 1925
saundersi	9♂♂	277–293 (283.7)	105–115 (109.5)	42–44 (43.2)	28–29 (28.3)	9.5–11 (10.3)	9–11 (10.0)	—	Dwight 1925
saundersi	6♀♀	268–282 (275.3)	101–107 (104.0)	39–41 (40.5)	23–27 (25.2)	8.5–10 (9.4)	8–9.5 (8.9)	—	Dwight 1925

Averages in parentheses.
*Wing flattened in this case, otherwise not known.
†Measured from skull in this case, otherwise from feathers.

Immature. So far as I know this plumage is undescribed.

Juvenile. (From Auezov 1971.) Head largely white. Nape, mantle and upperwing coverts reddish (*borovata*)-brown with white fringes. Uppertail coverts, underparts and underwing coverts white. Remiges – the black on the primaries is far more extensive than in the adult: 2nd* and 3rd primaries black, sometimes with a white mark on inner web of 2nd; on the inner webs of the succeeding primaries the white gradually becomes more extensive, approaching to within 50mm of the tip on 4th, and within 40mm on 5th; on 6th the outer web is white for 70mm from the base and there is a subterminal black band 30mm wide on the inner web; 7th and 8th are white with a black subterminal band 20 and 13mm respectively from the tip; 9th,

* I have increased all Auezov's numbers by one to take account of the tiny first primary, which he evidently ignored.

10th and 11th primaries and secondaries are white; the tips of all primaries are white. Tail – the outer 2 tail feathers are all white, the others each bearing one black-brown spot 10–12mm from the tip, together forming a subterminal band. Bill black, lightening somewhat towards the base. Legs and feet dark grey.

Nestling. (From Auezov 1971.) The downy nestlings of *relictus* are pure white, resembling those of *ichthyaetus* so closely that they are separable only by size, whereas those of *melanocephalus* are speckled brown, buff and grey (Witherby *et al.* 1938–41). Bill black, legs and feet dark grey. At 10–12 days old reddish-brown feathers with white borders begin to grow on the nape and shoulders. The weight of a nestling 1–2 days old was 59g, and of one on 23 June 1969 was 299g (Auezov 1971).

Egg. Light olive colour with blackish or dark brown spots. Of 20 measured the average dimensions were 59.8 x 42.1mm (57.0–62.0 x 41.5–44.0) (Auezov 1971), whereas the average of 100 *melanocephalus* eggs was 53.73 x 38.11mm (47.8–61.9 x 34.9–42.0) (Witherby *et al.* 1938–41). The usual clutch size is 3, but varies from 1 to 4 (Kovshar 1974).

Voice. I found *relictus* to be clamorous in flight, frequently uttering a far-carrying laughing 'ka-ka, ka-ka, kee-aa' recalling *ichthyaetus.* (See also Zubakin *et al.* 1979, Boswall & Dickson in press).

Food. Fish, crustacea and insects are given by Zhuravlev (1975).

Habitat. Orok Nor is a slightly saline lake set in the arid-steppe zone of Mongolia. Its shores are shallow with some mud, sand and fine shingle. In April Relict Gulls in pairs scouted the shores. They often sat on the water and stood on the shore, normally isolated, but sometimes on the edge of a *ridibundus* flock.

Alakul is also saline. Sredni island rises in terraces to 65m above sea level (Auezov 1971) and supports, besides *relictus,* large breeding colonies of Caspian Tern *Hydroprogne tschegrava,* Gull-billed Tern *Gelochelidon nilotica,* Common Tern *Sterna hirundo,* Herring Gull *L. argentatus* and Great Black-headed Gull *L. ichthyaetus.* These are the same members of the family Laridae, besides *ridibundus,* present with *relictus* at Orok Nor. At the Torey lakes too, *relictus* breeds alongside *argentatus* and *H. tschegrava* (Larionov & Cheltsov-Bebutov 1972).

At Alakul, *relictus* usually nests on islets just above the normal water level at the edge of Sredni island, where the nests are prone to flooding during storms. Between 1969 and 1974 the number of breeding pairs fluctuated between none (1973) and 120 (1972), the poorest years generally being those when flooding of the nest sites occurred (Kovshar 1974, Auezov 1975, Zhuravlev 1975). Likewise, the Torey lakes population is susceptible to rising water levels (Potapov, *in* Borodin *et al.* 1978). Such vulnerability has led to the inclusion of *relictus* in the USSR Red Data Book (Borodin *et al.* 1978).

Summary

L. relictus is an Asiatic hooded gull generally resembling *melanocephalus* of Europe. It differs, however, in (a) being bigger in every respect: it has a longer wing, longer tail, longer tarsus and slightly more massive bill. The adult differs in having (b) primaries marked with black distally, (c) a more extensive hood, which is chocolate brown, not black, anteriorly, and (d) the periorbital flashes more prominent. The juvenile differs in having (e) white

secondaries and (f) completely white outer tail feathers. The nestling differs (g) in being wholly white. The wing pattern of the adult and the white nestling are features in common with *ichthyaetus*.

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Address. A. R. Kitson, 12 Hillside Terrace, Steyning, Sussex.

(ii)

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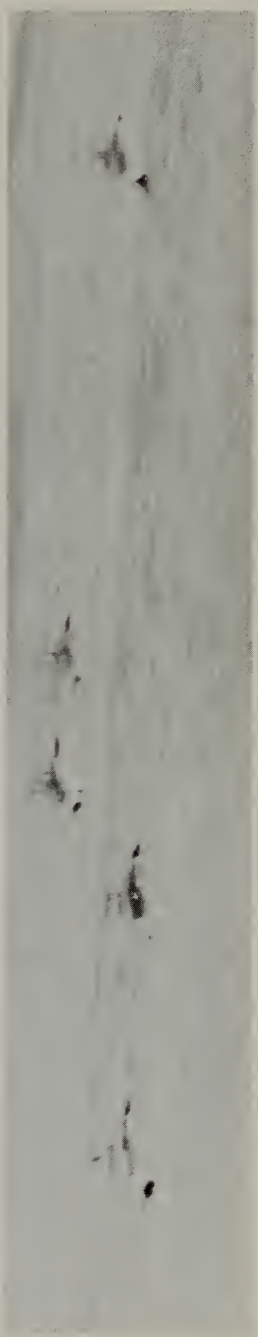

Fig. 1. (i) Left to right: *Larus relictus, ridibundus* (3), *ichtyaetus* (2), at Orok Nor, Mongolia, 28 April 1977.

(ii) (iii) Adult *relictus* in flight, Orok Nor, Mongolia, 28 April 1977.
Photographs by Alan Kitson